Basic Standards for Fellowship Training in Gynecologic Oncology

American Osteopathic Association
and
American College of Osteopathic Obstetricians & Gynecologists

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BASIC STANDARDS FOR FELLOWSHIP TRAINING
IN
GYNECOLOGIC ONCOLOGY

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BASIC STANDARDS FOR FELLOWSHIP TRAINING IN GYNECOLOGIC ONCOLOGY

ARTICLE I - INTRODUCTION
These are the basic standards for fellowship training in Gynecologic Oncology as approved by the American Osteopathic Association and developed by the American College of Osteopathic Obstetricians and Gynecologists. These standards are designed to provide the osteopathic fellow with advanced and concentrated training in Gynecologic Oncology and to prepare the fellow for examination for certification in Gynecologic Oncology by the American Osteopathic Board of Obstetrics and Gynecology (AOBOG).

ARTICLE II – MISSION
The mission of the osteopathic Gynecologic Oncology fellowship program is to provide fellows with comprehensive structured cognitive and clinical education that will enable them to become competent, proficient, and professional osteopathic specialist in Gynecologic Oncology.

ARTICLE III – EDUCATIONAL PROGRAM GOALS
The fellowship program is required to provide a curriculum that promotes and assesses competencies in the following seven areas:

1. **Osteopathic Philosophy and Osteopathic Manipulative Treatment**
   Fellows are expected to demonstrate and apply knowledge of accepted standards in osteopathic manipulative treatment (OMT) in the discipline of gynecologic oncology. The educational goal is to train a skilled and competent osteopathic practitioner who remains dedicated to life-long learning and to practice habits in osteopathic philosophy and manipulative medicine.

2. **Medical Knowledge**
   Fellows must demonstrate and apply integrative knowledge of accepted standards of clinical medicine and osteopathic principles and practice (OPP) in the discipline of gynecologic oncology, remain current with new developments in medicine, and participate in life-long learning activities, including research.
   a. Demonstrate competency in the understanding and application of clinical medicine to osteopathic patient care.
   b. Know and apply the foundations of clinical and behavioral medicine in the discipline of gynecologic oncology with application of osteopathic correlations.

3. **Osteopathic Patient Care**
   Osteopathic fellows must demonstrate the ability to treat patients, provide medical care that incorporates the osteopathic philosophy, patient empathy, awareness of behavioral issues, the incorporation of preventive medicine and health promotion.
   a. Gather accurate, essential information for all sources, including medical interviews, osteopathic physical and structural examinations as indicated, medical records, and diagnostic/therapeutic plans and treatments.
   b. Validate competency in the performance of diagnosis, osteopathic and other treatment and procedures in the discipline of gynecologic oncology.

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c. Provide health care services consistent with osteopathic philosophy, including preventative medicine and health promotion based on current scientific evidence.

4. **Interpersonal and Communication Skills in Osteopathic Medical Practice**

Fellows are expected to demonstrate interpersonal and communication skills that enable them to establish and maintain professional relationships with patients, families, and other members of health care teams.

a. Demonstrate effectiveness in developing doctor-patient relationships.

b. Exhibit listening, written and oral communication skills in professional interactions with patients, families and other health professionals.

5. **Professionalism in Osteopathic Medical Practice**

Fellows are expected to uphold the Osteopathic Oath in the conduct of their professional activities that promote advocacy of patient welfare, adherence to ethical principles, collaboration with health professionals, life-long learning, and sensitivity to a diverse patient population. Fellows should be cognizant of their own physical and mental health in order to care for patients.

a. Demonstrate respect for patients and families and advocate for the primacy of patient’s welfare and autonomy.

b. Adhere to ethical principles in the practice of osteopathic medicine.

c. Demonstrate awareness and attention to issues of culture, religion, age, gender, sexual orientation, and mental and physical disabilities.

d. Demonstrate awareness of one’s mental and physical health.

6. **Osteopathic Medical Practice-Based Learning and Improvement**

Fellows must demonstrate the ability to critically evaluate their methods of clinical practice, integrate evidence-based traditional and osteopathic medical principles into patient care, show an understanding of research methods, and improve patient care practices.

a. Treat patients in a manner consistent with the most up-to-date information on diagnostic and therapeutic effectiveness (traditional and osteopathic)


c. Understand research methods, medical informatics, and the application of technology as applied to medicine.

7. **Systems-Based Osteopathic Medical Practice**

Fellows are expected to demonstrate an understanding of health care delivery systems, provide qualitative osteopathic patient care within the system, and practice cost-effective medicine.

a. Understand national and local health care delivery systems and medical societies and how they affect patient care, professional practice and relate to advocacy.

b. Advocate for quality health care on behalf of patients and assist them in their interactions with the complexities of the medical system.
ARTICLE IV - INSTITUTIONAL REQUIREMENTS

A. The institution must have an organized division of gynecologic oncology.

B. The institution must provide a volume of major gynecologic cancer cases of scope and variety to train a minimum of three fellows.

C. The institution shall maintain a medical library containing carefully selected texts, the latest editions of medical journals, other publications, various branches pertaining to training in gynecologic oncology medicine.

D. The institution must provide:

1. A pathology service to train the subspecialty fellow in the broad aspects of Gynecologic Cancer diagnosis and to have available postmortem examination of women.

2. A gynecologic oncology patient unit at one or more institutions to enable the fellow to develop expertise in managing those patients under the direction of the program director or supervising gynecologic oncologist.

ARTICLE V - PROGRAM REQUIREMENTS AND CONTENT

A. The subspecialty fellowship training program in gynecologic oncology shall be thirty-six (36) months in duration. A minimum of twenty-four (24) months is required for clinical gynecologic oncology and a minimum of six (6) months is required for research. The remaining six (6) months may be tailored to electives or be focused in a specific clinical or research area at the discretion of the program director.

B. The general educational content of the program shall be consistent with the educational objectives of the Guide to Learning in Gynecologic Oncology (reprinted in Appendix II), and include:

1. Osteopathic philosophy, principles and practice as they relate to gynecologic oncology shall be integrated into the training program.

2. Basic science training shall emphasize the relationship of anatomy, pathology, physiology, biochemistry, bacteriology as they relate to gynecologic oncology.

3. There shall be a postgraduate course in statistics relative to the gathering, dissemination and interpretation of biomedical information.

A second postgraduate course relating to biomedical information and dissemination shall be required (examples: computer science in biomedical data gathering, thesis preparation, health care administration) to enable the fellow to integrate his/her skills into the present day medical health care system.

Subspecialty fellows that have already completed a graduate level course in statistics and other such courses may, at the discretion of the program director, and upon approval of PESC during the first year of training, satisfy this requirement by;

a. Taking additional graduate level courses pertinent to the subspecialty of gynecologic oncology, or

b. Using this protected time for the performance of the pertinent research related to the training program, or

c. Using this protected time for the acquisition of clinical skills pertinent to the subspecialty training program
4. The program structure and contents shall include out-patient evaluation of gynecologic oncology patients.
   a. The fellow shall receive training in and ultimately supervise high risk (complicated by cervical abnormalities or pelvic masses concurrent with the pregnancy) pregnancy clinics under the direction of an attending gynecologic oncologist.
   b. The fellow shall evaluate patients, perform or order diagnostic testing and therapeutic regimes as approved by the attending gynecologic oncologist.
   c. The service shall provide a number of gynecologic oncology patients as well as follow-up visits, both on an in-patient and out-patient basis. The clinical problems shall include, but not be limited to, the following: Pre-invasive disease of the cervix, vagina and vulva; invasive cancer of the cervix, vagina and vulva; endometrial hyperplasia; adenocarcinoma of the uterus; sarcoma of the uterus; carcinoma of the fallopian tube; epithelial ovarian cancer; germ cell and stromal tumors of the ovary; principles, toxicity and mechanisms of action of chemotherapy, genetics of cancer, biostatistics; radiation oncology; terminal care; preoperative, postoperative and intensive care management of the gynecologic oncology patient.
   d. The fellow shall be trained in the chemo-pharmacology and therapeutics of all related chemicals and physical modalities utilized in the diagnosis and management of gynecologic oncology patients.

5. The training program shall provide content with regard to behavioral characteristics involved in the interaction between the fellow, the patient and the teaching staff. The program shall enhance the ability of the fellow to understand the contingencies of health and illness and the development of a mature concern regarding the quality of patient care.

6. Investigational research shall be a fundamental part of the training program. The climate must exist to facilitate both clinical and laboratory investigation to advance the body of knowledge in gynecologic oncology and the osteopathic profession.

7. The fellowship program director must provide evidence of scholarly activity and productivity by faculty and fellows in clinical and/or laboratory research. Research projects can be developed either within the department or in collaboration with other academic departments. The portion of each fellow’s education devoted to research must ultimately result in a thesis that may be worthy of publication in a peer-reviewed journal. It is expected that fellows will acquire a thorough knowledge and understanding of the methodologies and analyses used in research protocols that relate to research in their area of study. An understanding of the statistical analysis of research projects is mandatory.

C. Thesis defense will follow the form outlined in the appendix to be utilized by the faculty and program director. Thesis defense form will be provided to PESC prior to completion of program.

**ARTICLE VI- PROGRAM DIRECTOR / FACULTY**

A. Program Director Requirements

1. The program director shall be a diplomate of the American Osteopathic Board of Obstetrics and Gynecology (AOBOG) and certified in gynecologic oncology,
2. The program director shall be a member in good standing of the American College of Osteopathic Obstetricians and Gynecologists.

3. The program director shall insure that osteopathic theory and practice and its application to the specialty are emphasized.

B. Program Director Duties

1. The program director shall be required to submit annual progress reports on the fellows to the director of medical education of the hospital, and the American College of Osteopathic Obstetricians and Gynecologists (ACOOG). These reports shall cover the fellow’s progress, acceptability as a prospective specialist, and other factors pertinent to the continuation of training.

2. The program director shall annually retrieve his/her evaluation of the program director and the program faculty summary as performed by the fellows within sixty (60) days of the end of each training year and assure that these evaluations are reviewed annually with the director of medical education.

3. In the event of a program director vacancy, another faculty member certified in GYN ONC shall assume interim responsibility for oversight of the program. The Osteopathic DME will consult on the completion of all required reports and administrative functions. Status reports of the institution’s efforts to recruit a permanent AOBOG certified program director shall be provided to the PESC every 6 months. Failure to comply with recruitment policy and documented deficiencies in program administration will result in a request to the PTRC for an early inspection.

C. Faculty

1. Consultative services must be available in the areas of pathology, critical care, colorectal surgery and urology. With evidence of mutually complementary active and continuing interaction between these groups and the program’s fellow.

2. There must be a minimum of two faculty members who are board certified by the AOA American Osteopathic Board of Obstetrics Gynecology (AOBOG) and/or the American Board of Obstetrics and Gynecology (ABOG) in the subspecialty of gynecologic oncology.

ARTICLE VII - FELLOW REQUIREMENTS

A. The fellow must have completed an AOA approved residency in obstetrics and gynecology.

B. The fellow shall have applied for the AOBOG general OB/GYN certification exam and shall have taken the written portion of the exam prior to matriculating the fellowship.

C. All fellows shall maintain satisfactory records of work performed. These shall be submitted monthly to the program director for review and verification. These records shall be filed with the director of medical education.
D. The fellow shall not be permitted to act as a consultant; however, fellows may render services to affiliated clinics with the approval of the program director.

E. The fellow shall submit annually, verified by the signature of the program director, a training program report to the ACOOG within thirty (30) days of the end of each year’s training. The fellow must also complete an annual evaluation of the program director and faculty in a format as required by the ACOOG.

F. The fellow will conduct investigative work leading to the production of a first authored thesis. The submission of an approved thesis is a requirement for entrance to the oral examination. The subject should be in the field of gynecologic oncology, and the thesis should be on clinical or basic research and not a review of work by others. The fellow will follow the thesis defense process before graduating from the fellowship as outlined in the appendix.

G. All fellows must register as a candidate member of the ACOOG within sixty (60) days of matriculating to the fellowship and must keep the ACOOG informed of a working e-mail address at all times. The fellow will maintain a standard of professionalism that meets or exceeds the code of ethics of the ACOOG and the AOA. Candidate members do not pay dues to ACOOG.

H. The fellow will attend conferences relating to gynecologic oncology.

I. The fellow must attend meetings including the annual meeting of the ACOOG, and any additional meetings as directed by the program director.

**ARTICLE VIII – EVALUATION**

A. Program Director and Faculty

1. The program director must submit reports to the director of medical education at least annually or sooner if the fellow’s progress is unsatisfactory as outlined below.

B. Remediation

1. The program director will inform the fellow verbally and in writing of unsatisfactory academic or clinical performance.

2. The fellow will be provided with a written plan to correct the deficiencies.

3. The fellow will receive a written evaluation following this period.

4. If after the above period deficiencies still exist, the fellow shall be placed on probation for a period of three to six months.

5. Following the probationary period, if the performance of the fellow is still judged to be unsatisfactory the fellow shall be dismissed.

C. The fellow shall be required to defend the thesis prior to completion of the program. A model examination form is shown in Appendix.
APPENDIX

A. Data on program director compensation will be collected and benchmarked by the ACOOG every two years. Aggregated data will be reported to osteopathic obstetrics and gynecology programs.

B. The institution should fund faculty development activities in addition to the minimum standard requirements to maintain proficiency and professionalism of all trainers, ultimately benefitting the fellow, program, and institution.

C. The PESC will not review end of year reports which are not submitted, as verified by postmark or electronic system data, within thirty (30) days of completion of training year, until the program pays a delinquency fee to ACOOG per delinquent year of training.

D. Failure of fellows to register as candidate members of the ACOOG within sixty (60) days of matriculating the residency program will result in a delinquency fee. Candidate members do not pay dues to ACOOG.

E. Program directors, fellows and faculty will maintain a standard of professionalism that meets or exceeds the code of ethics of the ACOOG, AOA and/or the American College of Obstetricians and Gynecologist if applicable to the individual.

F. If annual evaluation of the program director and faculty is received after the thirty (30) day deadline, reports will not be reviewed by the PESC until a late fee is paid to the ACOOG.

G. Fellow Research and Thesis Defense Summary will be utilized by institutional faculty to evaluate quality of investigative study and submitted to PESC as a condition of program complete status (Form located in ACOOG Postgraduate Training Program Administrative Manual)

H. The most current Educational Curriculum is listed in The Guide to Learning in Gynecologic Oncology, 2006. ABOG: Dallas, TX; 1-79. It is reprinted in Appendix II.

APPENDIX II

(next page)
Guide to Learning in Gynecologic Oncology

The Division of Gynecologic Oncology

The American Board of Obstetrics and Gynecology, Inc.

Spring - 2006
INTRODUCTION

The Guide to Learning in Gynecologic Oncology has been developed by The American Board of Obstetrics and Gynecology, Inc., to be of assistance to both the fellow in training and the Program Director. The basic educational needs that lead to appropriate achievement are presented. This description should not be misinterpreted as outlining the ideal or setting limits on learning or achievement.

The Division regards the fellow as a graduate student with the implied responsibility for self study and independent inquiry. The Program Director is responsible for providing adequate clinical experience, technical instruction, learning resources, study guidance and periodic direct personal evaluation of the fellow. The Program Director should review with the fellow an outline of study at least on an annual basis.

The personal qualities, professional behavior and special human concerns in dealing with cancer patients that are of such great importance in the practice of Gynecologic Oncology were deliberately not addressed in this document. It is our belief that this is an important responsibility for the Program Director to provide a suitable role model, personal instruction and regular evaluation.

The guide has two classifications of educational objectives. TERMINAL OBJECTIVE: describes what the fellow should know and be able to perform by the end of the fellowship. These objectives principally refer to problem-solving skills needed to make a diagnosis and implement management programs.

ENABLING OBJECTIVE: describes the skills the fellow must acquire to be able to accomplish the TERMINAL OBJECTIVE.
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I.

DIAGNOSTIC TECHNIQUES AND STAGING
I. DIAGNOSTIC TECHNIQUES AND STAGING

Terminal Objectives:
The fellow should acquire sufficient knowledge of diagnostic techniques and staging to diagnose appropriately and stage gynecological malignancies.

Enabling Objectives:
A. The fellow should be able to take:
   1. a comprehensive medical history and perform a general physical examination.
   2. a specific gynecologic history and perform a gynecologic examination.
   3. an oncologic history and perform an examination directed towards the evaluation of cancer.
B. The fellow should be able to select the appropriate diagnostic techniques needed to:
   1. establish the diagnosis.
   2. establish the extent of disease.
   3. evaluate co-existing disease which may have an important bearing on selection of therapy and response to therapy.
C. The fellow should be able to stage the cancer according to currently accepted guidelines.
D. The fellow should be familiar with the assessment and performance of the following techniques:
   1. visual diagnostic techniques including an understanding of the indications, limitations and techniques of
      a. colposcopy of vulva, vagina and cervix.
      b. methods of staining with acetic acid, Toluidine blue and Lugol's solution.
c. hysteroscopy.
d. cystoscopy.
e. proctosigmoidoscopy.
f. upper endoscopy and colonoscopy.

2. tissue sampling, including an understanding of:
   a. open biopsy including the indications for
      (1) directed cervical biopsies, endocervical curettage,
          cone biopsy, and LEEP,
      (2) biopsies of the vulva and vagina,
      (3) endometrial biopsies and dilatation and curettage,
      (4) biopsy of the inguinal, pelvic, paraaortic and
          supraclavicular nodes, and
      (5) biopsy of metastatic sites such as lung, liver and
          bone.
   b. percutaneous biopsy including the indications for
      (1) fine-needle aspiration (cytology) or needle
          biopsies (tissue) of pelvic, abdominal or
          cutaneous lesions,
      (2) fine-needle aspiration or needle biopsy of lung,
          liver and breast lesions, and
      (3) CT and ultrasound guided biopsies of deep
          lesions.
   c. the interpretation of cytological reports and an
      understanding of the limitations, indications and
      techniques of
      (1) cytologic preparations, and
      (2) cytologic interpretation.

3. diagnostic imaging including the indications, limitations
   and principles of interpretations for
   a. plain films.
   b. contrast studies (upper and lower GI studies and
intravenous pyelography).
c. computerized tomography.
d. magnetic resonance imaging.
e. ultrasonography and Doppler flow studies.
f. angiography.
g. positron emission tomography.
h. radioisotope scanning.

4. studies of blood and body fluids including an understanding of the indications and limitations of the following tests. The fellow should be able to interpret normal and abnormal values and integrate this interpretation into diagnostic and therapeutic decision making using tests of the following parameters:
a. hematologic.
b. urinary.
c. hepatic.
d. coagulation system.
e. electrolytes and blood gases.
f. tumor markers.
g. molecular and genetic studies.
h. hormonal receptors.

5. cardiopulmonary evaluation including an understanding of the indications and limitations of the following system examinations. The fellow should be able to integrate this information into diagnostic and therapeutic decision-making, including an understanding of:
a. pulmonary function testing.
b. cardiac evaluation.
c. evaluation of critical care parameters, such as, but not limited to, electrocardiogram, central venous pressure, pulmonary wedge pressure, mean arterial pressure, cardiac output and systemic vascular
resistance.

6. nutritional assessment and therapy including an understanding of:
   a. tests used to assess nutritional status.
   b. the indications, benefits, techniques and complications of nutritional support including an understanding of:
      (1) total parenteral nutrition, and
      (2) enteral nutrition.
II.

PATHOLOGY
II. PATHOLOGY

Terminal Objectives:

The fellow should be able to identify, on the basis of gross visual and microscopic evaluation, lesions that are premalignant or malignant and distinguish them from benign disorders. Moreover, the fellow should understand the genesis of malignant tumors, the biologic behavior of premalignant and malignant tumors, and be able to recognize important characteristics and prognostic features of such lesions. Finally, the fellow should understand the principles of basic laboratory techniques such as frozen section histochemical staining and immunohistochemical staining. The fellow should also be able to identify special staining tests that are used to identify specific histologic types of cancers.

Enabling Objectives:

A. Vulva-The fellow should be able to:
   1. identify correctly by gross and/or microscopic evaluation
      a. benign conditions, such as:
         (1) hypertrophic and atrophic lesions such as lichen sclerosus, and the hyperkeratotic dystrophies,
         (2) granular cell myoblastoma, and
         (3) condyloma acuminate.
      b. squamous epithelial dysplasia (VIN) and carcinoma in situ.
      c. squamous cell carcinoma.
      d. adenocarcinoma.
      e. extra-mammary Paget disease.
      f. malignant melanoma.
      g. sarcoma.
h. Bartholin gland structures, including:
   (1) normal,
   (2) duct cysts, and
   (3) carcinoma (squamous, transitional cell, adenocarcinoma, adenoid cystic carcinoma).

i. rare tumors (e.g., Merkel cell tumors, neuroendocrine tumors, etc.)

2. understand the relationship between viral infections, epithelial growth and carcinoma.

3. compare and contrast in situ and invasive squamous cell carcinoma and identify features of beginning invasions (and recognize the problems of tangential sectioning).

4. describe the natural history and biologic behavior of the various vulvar neoplasms.

5. know the frequency of the occurrence of vulvar carcinoma in various sites and the routes of spread.

6. know the relationship of vulvar carcinoma to other primary genital carcinomas.

7. be able to discuss the treatment of each of these diseases with appropriate references to the literature defending such treatment.

B. Vagina - The fellow should be able to:

1. identify correctly by gross and/or microscopic evaluation
   a. benign conditions, such as:
      (1) endometriosis and pseudo-decidual reaction,
      (2) adenosis, and
      (3) squamous cell papilloma and condyloma acuminatum.
   b. squamous epithelial dysplasia and carcinoma in situ (VAIN).
   c. squamous cell carcinoma.
   d. adenocarcinoma.
e. malignant melanoma.
f. sarcoma botryoides and metastatic lesions.
g. other rare tumors (e.g., endodermal sinus tumors, sarcomas, etc.).
h. metastatic lesions.

2. discuss the possible consequences (and their relative occurrence) of administration of hormones to the mother during pregnancy upon the genital tract of the female infant.

3. describe the natural history, sites of occurrence and route of spread of vaginal carcinoma.

4. describe treatment of each type of pathologic condition and be able to defend this treatment based on currently published literature.

C. Cervix-The fellow should be able to:

1. identify correctly cytological preparations (benign versus malignant) and understand the problems in evaluation of:
   a. normal epithelium.
   b. cervical intraepithelial neoplasia.
   c. squamous cell carcinoma.
   d. adenocarcinoma.
   e. viral changes (HSV and HPV).
   f. trichomonads and monilia.
   g. ASCUS and AGUS.

2. understand the terminology and therapeutic implications of the Bethesda System.

3. identify correctly by microscopic evaluation:
   a. squamous metaplasia.
   b. microglandular hyperplasia.
   c. koilocytosis.
   d. squamous epithelial dysplasia and carcinoma in situ (CIN).
e. superficially invasive squamous cell carcinoma.
f. squamous cell carcinoma.
g. adenocarcinoma.
h. rare tumors (e.g., adenoid cystic tumors, lymphomas, neuroendocrine tumors etc.).
i. metastatic lesions.

4. describe the development of the transformation zone with the formation of squamous metaplasia and its various stages of maturation; the development of dysplasia and the various stages in the spectrum to carcinoma in situ.

5. differentiate the patterns of viral involvement of cervical epithelium from dysplasia and recognize the combinations.

6. differentiate between gland involvement by carcinoma in situ and stromal invasion.

7. understand and describe the various definitions of microinvasive carcinoma and microcarcinoma; describe the rationale for treatment of each pathologic subdivision.

8. describe and correlate the colposcopic patterns, cytologic findings and histologic characteristics in cervical dysplasia and carcinoma; be able to explain lack of correlation.

9. state methods by which adenocarcinoma of the endometrium may be distinguished from adenocarcinoma of the cervix.

10. describe the identification and implications of lymphovascular invasion by cervical cancer.

11. understand the natural history of cervical carcinoma and the factors that influence it.

12. understand the influence of pregnancy on the management and outcome of both preinvasive and
invasive cervical cancer appearing in the first, second and third trimesters.

13. understand the association of cervical neoplasia related to the human immunodeficiency virus (HIV).

14. understand the treatments for the various cervical abnormalities utilizing the treatment modalities available. These would include radiation, chemotherapy and surgery.

D. **Endometrium**—The fellow should be able to:

1. identify histologic preparations of:
   a. benign nonhyperplastic endometrium, including:
      (1) proliferative,
      (2) secretory,
      (3) hormonally suppressed endometrium,
      (4) endometrium of pregnancy,
      (5) Arias-Stella pattern,
      (6) adenomyosis, and
      (7) proliferative with breakdown.
   b. hyperplastic endometrium, including:
      (1) simple hyperplasia,
      (2) complex hyperplasia, and
      (3) simple and complex hyperplasia with atypia.
   c. carcinoma, including:
      (1) adenocarcinoma,
      (2) adenocarcinoma with squamous elements that are:
         (a) benign, and
         (b) malignant,
      (3) papillary serous carcinoma,
      (4) squamous carcinoma,
      (5) mucinous carcinoma, and
      (6) clear cell carcinoma.
d. stromal lesions, including the spectrum of benign (stromal nodule), to low-grade sarcoma (“endolymphatic stromal myosis”), to stromal sarcoma.
e. combined epithelial and stromal lesions, that is, carcinomas (malignant mixed mullerian tumors) with:
   (1) homologous elements, and
   (2) heterologous elements.
f. leiomyosarcoma.
g. endometrial stromal sarcomas and features that differentiate high grade from low grade and criteria that determine malignancy.
h. metastatic carcinoma.
2. identify classic cytologic examples of:
   a. endometrial cells that are benign.
   b. adenocarcinoma.
3. discuss data concerning the relationship between endometrial hyperplasia and adenocarcinoma.
4. understand the natural history, biologic behavior and routes of spread of:
   a. endometrial adenocarcinoma (all cell types).
   b. endometrial stromal sarcoma.
   c. leiomyosarcoma.
   d. carcinosarcomas (malignant mixed mullerian tumors).
5. understand the difficulty in differentiating between atypia and well-differentiated adenocarcinoma.
6. state the accepted criteria for differentiating leiomyoma and leiomyosarcoma and for grading leiomyosarcomas.
7. differentiate between adenomyosis and invasive carcinoma in the presence of endometrial carcinoma.
8. understand the pros and cons of hormone replacement therapy for endometrial carcinoma survivors.
9. describe and justify the various treatment modalities for these diseases of the endometrium.

E. Fallopian Tube - The fellow should be able to:
   1. identify grossly and microscopically:
      a. benign lesions simulating tumor, including:
         (1) marked chronic salpingitis,
         (2) healed follicular salpingitis,
         (3) tuberculous salpingitis with an active epithelial component, and
         (4) salpingitis isthmica nodosa.
      b. benign endometrial-type lesions, including:
         (1) endometriosis (plical and subserosal), and
         (2) pseudodecidual reaction (plical and subserosal).
      c. pregnancy-related lesions, including:
         (1) ectopic pregnancy, and
         (2) placental site (villi not in section).
      d. adenocarcinoma and carcinosarcoma.
      e. metastatic carcinoma.
   2. understand how to distinguish between primary and secondary tubal tumors.
   3. describe the treatment of these various pathologies being able to justify a chosen treatment using evidence based reasoning.

F. Ovary - The fellow should be able to:
   1. identify grossly and/or microscopically:
      a. epithelial tumors and the difference between benign, low malignant potential, and malignant lesions.
      b. sex cord stromal tumors.
      c. germ cell tumors.
      d. rare tumors (neuroendocrine small cell carcinomas,
1. identify grossly and/or microscopically:
   a. normal early pregnancy (including a pre-villous ovum).
   b. hydatidiform mole, including:
      (1) complete, and
      (2) partial.
   c. invasive mole.
   d. placental site tumors.
   e. choriocarcinoma.
2. describe the natural history and biologic behavior of the various gestational trophoblastic diseases.

H. **Lymph Nodes**-The fellow should be able to:
1. identify microscopically
   a. metastatic carcinoma.
   b. benign epithelial inclusions.
2. recognize malignant epithelial cells in lymph-node aspirations.

I. **Omentum**-The fellow should be able to recognize *foci* of metastatic carcinoma to the omentum.
III.

PHYSIOLOGY AND PATHOPHYSIOLOGY
III. PHYSIOLOGY AND PATHOPHYSIOLOGY

Terminal Objectives:

The fellow should have sufficient knowledge of physiology and pathophysiology to manage women with gynecologic malignancies.

Enabling Objectives:

A. Fluid and Electrolyte Management-The fellow should be able to understand the significance of:
   1. fluid compartments and the toxicities associated with changes in:
      a. total body water secondary to permeability alterations.
      b. normal exchanges of fluid and electrolytes, including:
         1. water balance, and
         2. electrolyte balance.
   2. fluid and electrolyte abnormalities, including:
      a. volume deficits and excesses.
      b. abnormalities of sodium concentration.
      c. abnormalities of potassium concentration.
      d. respiratory and metabolic acidosis and alkalosis.

B. Nutrition-The fellow should understand:
   1. normal adult daily requirements for water, electrolytes, calories, protein, carbohydrate, fat and essential vitamins.
   2. calculation of results of deprivation of water, electrolytes, calories and essential vitamins and minerals.
   3. how to apply calculations of specific abnormalities to nutritional replacement requirements.
   4. indications for total parenteral nutrition.
C. **Blood and Blood Components** - The fellow should know the following about:

1. transfusions, including:
   a. the composition, indications, risks and advantages of:
      (1) packed washed, frozen red cells,
      (2) platelets,
      (3) pooled and fresh frozen plasma,
      (4) albumin,
      (5) concentrated leukocytes, and
      (6) cryoprecipitate.
   b. the risks of transfusions due to infections with the human immunodeficiency virus (HIV), hepatitis, and other agents.
   c. how to recognize and manage transfusion reactions.

2. coagulation, including an understanding of:
   a. normal hemostasis.
   b. abnormal clotting states.
   c. the etiology, diagnosis and treatment of congenital and acquired bleeding disorders.

D. **Ventilation: Pulmonary Physiology in Normal and Disease States** - The fellow should be able to:

1. understand normal physiology and pulmonary function tests (see section on Diagnostic Technique and Preoperative Evaluation.).
2. diagnose and treat:
   a. pneumonia.
   b. both acute and chronic obstructive and/or restrictive lung disease.
3. diagnose and treat ventilatory failure due to acute or chronic pulmonary disease in operative or non-operative patients, including:
a. adult respiratory distress syndrome.
b. pleural effusions.
4. understand the use of mechanical ventilators.

E. **Shock: Etiology, Clinical Manifestations, and Treatment of Inadequate Organ Perfusion**-The fellow should be able to describe:
1. normal cardiac status (see section on Diagnostic Techniques and section on Pharmacology).
2. the etiology, diagnosis and treatment of physiologic alterations in major organs induced by:
   a. hypovolemic shock.
   b. cardiogenic shock.
   c. septic shock.

F. **Renal Function and Renal Failure**-The fellow should be able to understand and describe:
1. normal renal function, including:
   a. control mechanisms.
   b. evaluation of renal function (see section on Diagnostic Techniques).
2. abnormal renal function, including the clinical features, diagnosis and principles of management of:
   a. infectious diseases.
   b. obstructive lesions.
   c. inadequate perfusion.
   d. chemotherapy toxicity.
   e. antibiotic toxicity.
3. bladder changes associated with:
   a. chemotherapy.
   b. radiation therapy.
   c. tumor formation.
   d. surgery.

G. **Digestive Tract**-The fellow should be able to understand
and describe:
1. normal physiology.
2. changes in physiology induced by:
   a. irradiation.
   b. chemotherapy.
   c. tumor.
   d. extensive resection.
3. the diagnosis and management of complications due to:
   a. intestinal obstruction.
   b. blind loop syndrome.
   c. short bowel syndrome.
   d. fistula formation.
4. the diagnosis of liver derangements due to:
   a. extrahepatic and intrahepatic tumors.
   b. infectious agents.
   c. cirrhosis.
   d. hepatocellular toxicity.
5. the metabolism of calcium, phosphorus, magnesium and trace elements.

H. **Cardiovascular System**-The fellow should be able to understand and describe:
1. the pathogenesis of thrombophlebitis and be familiar with preventative and therapeutic measures.
2. the signs, systems, diagnosis and treatment of pulmonary embolus, including, but not limited to:
   a. ventilation perfusion scans.
   b. spiral CT scan of the chest.
   c. pulmonary angiographs.
   d. heparin therapy.
   e. coumadin therapy.
   f. vena cava filter and obstruction techniques.
   g. thrombolytic therapy.
3. the management of hemorrhage, including the principles of peripheral embolization.
4. the cardiac toxicities of:
   a. chemotherapy.
   b. radiotherapy.

I. **Neurology and Psychiatry** - The fellow should be able to understand and describe:
   1. central nervous system disorders related to cancer and the treatment of cancer associated with:
      a. the organic brain syndrome.
      b. spinal cord and nerve root compression caused by progression of cancer.
      c. brain and spinal cord injuries related to irradiation and/or chemotherapy.
   2. peripheral nervous system disorders and/or complications related to:
      a. surgery.
      b. chemotherapy.
      c. radiation.
      d. progression of cancer.
IV.

CARCINOGENESIS, INVASION AND METASTASIS
IV. CARCINOGENESIS, INVASION AND METASTASIS

Terminal Objectives:

The fellow should understand the current theories of carcinogenesis, including the effects of environment, family history and viral factors.

The fellow should understand the basic principles of invasion and metastasis.

Enabling Objectives:

A. The fellow should understand and be able to describe:
   1. the relationship of the following factors to carcinogenesis:
      a. hormones, including the effect of:
         (1) antenatal estrogens on vaginal and cervical malignancies,
         (2) exogenous estrogen administration, and
         (3) tamoxifen therapy.
      b. radiation, including the:
         (1) increased risk of sarcomas and other malignancies in previously radiated tissues, and
         (2) risks of diagnostic radiation procedures.
      c. chemotherapeutic agents, including the:
         (1) risk of myeloproliferative disorders, including leukemia after exposure to alkylating agents and other chemotherapies, and
         (2) risks to the fetus of maternal chemotherapy.
      d. the relationship of herpes, papillomavirus infections and other viruses.
      e. environmental contaminants such as the relationship
of talc and asbestos to ovarian and other malignancies, and smoking to lower genital tract cancer.

f. genetic mutations (e.g., BRCA1, mismatch repair genes etc.) and their relationship to various cancers.

2. familial patterns in breast, endometrial, ovarian and colon cancer.

3. the basic biology of neoplastic cells, including
   a. structure (nuclei, cytoplasm and membranes).
   b. enzymology and metabolism.

4. the cell cycle, including the following phases:
   a. G1.
   b. S.
   c. G2.
   d. M.
   e. G0.

5. the patterns of spread of gynecologic cancers.

6. the principles of tumor invasion and metastasis, including:
   a. tumor initiation.
   b. uncontrolled proliferation.
   c. angiogenesis.
   d. invasion of local tissues, lymphatics and blood vessels.
   e. colony formation at distant sites.
   f. tumor cell migration.

7. the molecular markers that are important for metastasis and invasion.
V.

GENETICS
V. GENETICS

Terminal Objectives:

The fellow should demonstrate an understanding of oncogenes, tumor suppressor genes, DNA repair genes, and oncogenesis and be familiar with the influence of genetics on the clinical practice of gynecologic oncology.

Enabling Objectives:

A. The fellow should understand and be able to understand and describe:
   1. the molecular genetics of neoplasia, including:
      a. proto-oncogenes.
      b. anti-oncogenes.
   2. the mechanisms of action of oncogenes, such as:
      a. transduction.
      b. point mutation.
      c. insertion mutation.
      d. amplification.
      e. translocation.
   3. tumor suppressor genes, such as:
      a. the retinoblastoma gene.
      b. the P53 gene.
   4. the nature and extent of chromosome changes in cancer, including:
      a. numerical vs. structural changes.
      b. specific vs. nonspecific changes.
      c. inherited vs. acquired changes.
   5. the role of oncogenes, including the:
      a. properties of oncogenes.
b. mechanisms of action of oncogenes.
c. specific families of oncogenes.
d. relationship between growth factors and oncogenes.

6. the basic principles of clinical cancer genetics and be able to relate the information to the practice of gynecologic oncology.

7. the cardinal principles of cancer genetics with respect to:
   a. age.
   b. bilaterality.
   c. multiple primary cancers.

8. cancer family syndromes, including:
   a. site-specific ovarian cancers.
   b. breast/ovarian family syndromes.
   c. the Lynch syndromes.
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VI.

STATISTICS AND EXPERIMENTAL DESIGN
VI. STATISTICS AND EXPERIMENTAL DESIGN

TERMINAL OBJECTIVE:

The fellow should demonstrate sufficient knowledge of epidemiology and statistical methods to design and interpret research.

ENABLING OBJECTIVES:

A. The fellow should be able to describe and interpret principles of epidemiology with regard to:
   1. descriptive epidemiology including:
      a. disease incidence/prevalence.
      b. adjustment of disease rates.
   2. causality of disease including:
      a. criteria for judging causality.
      b. quantitative assessment (relative risk, odds ratio).
   3. disease or risk factor screening including:
      a. criteria for establishing a screening program.
      b. quantitative assessments (sensitivity/specificity, receiver-operator characteristics curve, positive/negative predictive value).

B. Study design
   1. Experimental
      a. randomized clinical trials.
      b. difference between phase I, II, or III trials.
      c. design of non-inferiority trial.
   2. Observational (e.g., prospective cohort, retrospective cohort, case-control).
   3. Appropriate conduct of a study including:
      a. calculation of power.
b. case selection.
c. control selection.
d. eligibility criteria
e. randomization.
f. human subject rights.
g. avoidance of bias.
h. avoidance of confounding variables.
i. role of data safety-monitoring board.
j. importance of choosing preliminary endpoints (response, progression-free survival, overall survival, etc.).
k. role of IRB.

B. The fellow should be able to explain:
   1. descriptive statistics including:
      a. measures of central tendency.
      b. measures of dispersion.
   2. statistical estimates of variability (confidence interval).
   3. inference (hypothesis testing) including:
      a. confidence intervals.
      b. non-parametric testing (e.g., rank sign test).
      c. parametric testing such as:
         (1) two-sample tests (e.g., z, t test),
         (2) multiple sample tests (e.g., analysis of variance),
         and
         (3) differences in proportions (e.g., chi square).
      d. multivariate techniques (e.g., multiple regression and logistic regression).
      e. survival analysis.

C. The fellow should know when to seek statistical consultation for research planning.

D. The fellow should know the importance, use and limitations of computers in storage and analysis of data.
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VII.

TUMOR IMMUNOLOGY
VII. TUMOR IMMUNOLOGY

Terminal Objectives:

The fellow should know the essential components of the immune system.

Enabling Objectives:

A. Definitions-The fellow must be able to define:
   1. antigen and antibody.
   2. and describe the origin and function of B cells, macrophages, and natural killer (NK) cells.
   3. five (5) classes of antibodies and describe their origin and function.
   4. and describe the origin and function of T cells, and the three (3) major subsets of T cells.
   5. and list cytokines which may have medical application (e.g., TNF, interleukins, interferon, colony stimulating factors, etc.).
   6. complement and describe its origin, function and underlying mechanism(s) of action.

B. Immune Responses-The fellow must be able to define:
   1. the mechanism of antibody production following exposure to antigen.
   2. and describe the mechanisms of cytotoxic lymphocytes following exposure to foreign tissue antigens or other antigenic substances.
   3. and list the function(s) of the major cytokines as effector mechanisms, alone and in combination.
   4. the mechanism(s) of immediate and delayed hypersensitivity.
and differentiate between humoral-mediated response and cell-mediated response.
6. and describe mechanisms of cell-mediated cytotoxicity.
7. and give examples of immunosuppression, enhancement and tolerance.
8. and describe the effect of nutritional depletion on the immune system and the methods to monitor this effect.
9. and describe the effect of cytotoxic chemotherapy on the immune system.
10. and describe the effects of advanced malignancy on the immune system.
C. **Tumor Immunology** - The fellow should know the current data cited as evidence that the immune system is involved with neoplastic processes and must be able to:
   1. distinguish between:
      a. tumor-specific transplantation antigen (TSTA).
      b. tumor-associated antigens (TAA).
      c. human leukocyte antigen (HLA).
   2. describe the theory of immunologic surveillance and loss of rejection.
   3. describe the occurrence of neoplasms in immunodeficient and immunosuppressed individuals.
   4. describe the specific antigenicity found in tumors induced by chemical carcinogens.
   5. describe the converse antigenicity found in tumors induced by viral carcinogens.
   6. describe the immunologic evidence for viral oncogenesis.
   7. explain the significance of carcinoembryonic antigen (CEA), alpha-fetoprotein (AFP) and human chorionic gonadotropin (hCG) in patients with malignancies.
   8. describe evidence for tumor associated antigens in gynecologic malignancies.
9. describe the use of serum tumor markers, e.g., CA-125, CA 19-9, CEA and others, in gynecologic cancer.

D. **Immunotherapy** - The fellow must be able to:
   1. define and describe the three methods of cellular immunotherapy (i.e., active specific, active nonspecific and passive) and describe the principle(s) for their use.
   2. define and describe the medical uses of cytokines.
   3. describe how monoclonal antibodies are generated and how they are applied to cancer biology for diagnosis and therapy.
   4. define and describe the principles of vaccine therapy of cancer.
VIII.

CHEMOTHERAPY OF GYNECOLOGICAL CANCERS
III. CHEMOTHERAPY OF GYNECOLOGIC CANCERS

Terminal Objectives:

The fellow should understand the pharmacology of major drugs used in human tumor chemotherapy and be able to use them in a rational manner.

Enabling Objectives:

A. The fellow should be able to understand and describe:
   1. tumor biology, including the:
      a. kinetics of cancer cell growth, the cell cycle and growth fraction.
      b. general principles of action such as:
         (1) the log cell-kill principle,
         (2) cycle specificity,
         (3) phase specificity,
         (4) dose intensity, dose density, and
         (5) resistance mechanisms.
   2. classes of chemotherapeutic agents, including:
      a. alkylating agents.
      b. antimetabolites.
      c. natural products, including plant alkaloids, antibiotics and enzymes.
      d. hormones.
   3. the mechanisms of action of specific agents, including:
      a. specific mode of action.
      b. relationship of action to cell cycle.
   4. the pharmacology of specific agents and should know the:
      a. routes of administration and absorption (oral,
intravenous, intraperitoneal, intramuscular, intrathecal, etc.).

b. distribution.
c. biotransformation.
d. excretion.
e. interactions with other drugs.
f. interaction with radiotherapy and hyperthermia.
g. mechanisms of drug resistance and approaches to reducing tumor resistance to anticancer drugs.

5. combination chemotherapy, including:
   a. the principles of combination chemotherapy.
   b. drug combinations in current use for gynecologic malignancy.
   c. the pharmacology of single agents, and the principles for the design of combination chemotherapeutic regimens, as well as the ability to construct logical drug combinations.
   d. the principles of specialized therapies such as high-dose chemotherapy with bone marrow transplant and intraperitoneal chemotherapy.

6. the general guidelines for clinical evaluation, including:
   a. the criteria for complete response, partial response, progressive disease relapse.
   b. the concept of Phase I, II and III drug trials.
   c. current evidence for favorable adjunctive use of chemotherapy with surgery and/or radiation therapy.
   d. the rationale for dose schedule (timing), cycle length, dose intensity, and duration.

7. problems with toxicity/complications, including:
   a. general effects of rapidly proliferating epithelium, such as bone marrow, G.I. tract and hair follicles.
   b. specific major toxic effects of individual and
combinations of drugs.

C. the management of toxicity using:
   1. supportive (nutritional, hematinic, prophylactic antibiotics) methods, and
   2. specific (blood component therapy, specific antagonists) methods.

d. the management of extravasation of chemotherapeutic agents.

8. treatment by organ site, histology and stage of agents of established value within standard guidelines for specific tumors.

9. the role of growth factors and cytokines in the prevention of chemotherapy toxicity and in the treatment of malignancies.
IX.

PHARMACOLOGY
IX. PHARMACOLOGY

Terminal Objectives:

The fellow should know the following pharmacologic characteristics of the commonly used agents in each of the subsequent sections.

- Distribution
- Metabolism
- Excretion
- Pharmacokinetics and pharmacodynamics

The fellow should have an appreciation for adverse effects of the pharmacologic agents prescribed.

The fellow should have an awareness of the potential for drug interactions when using combinations of pharmacologic agents.

Enabling Objectives:

A. Nutrition- the fellow should understand the pharmacology of:
   1. the use of total parenteral nutrition including the:
      a. indications.
      b. administration (central vs. peripheral).
      c. composition of solutions to be used (dextrose and amino acids).
      d. electrolytes, vitamins, and minerals.
      e. use of fat emulsions.
      f. complications of TPN associated with:
         (1) renal dysfunction,
         (2) hepatic dysfunction, and
(3) complications of venous access sites.
2. the use of gastrointestinal alimentation, including the:
   a. indications.
   b. routes of administration.
   c. composition of preparations available.
   d. complications.

B. **Wound Healing** - The fellow should have a general knowledge of the role of:
   1. vitamins.
   2. trace metals.
   3. growth factors.
   4. chemotherapy.
   5. radiation therapy.

C. **Hematopoietic Agents**: As applied to the treatment of tumor related and treatment related cytopenias - The fellow must understand the use, effects and side effects of these agents:
   1. agents that accelerate erythropoiesis- erythropoietin and darbepoietin.
   2. agents that accelerate myeloid recovery- filgrastim, pegfilgrastim and sargramostim.

D. **Anti-Infective Agents** - The fellow should have an understanding of antibacterial, antiviral and antifungal therapeutic agents and should know:
   1. the principals of prophylactic anti-infective therapy.
   2. the mechanism of action and spectrum of activity of the major anti-infectives.
   3. the major toxicities of these agents.
   4. how to select the appropriate therapeutic agents or combinations of agents, including indications, route of administration, duration of therapy.
   5. use of topical anti-infectives in wounds.
E. **Analgesics** – The fellow should have a general knowledge of:

1. management of acute pain: tumor related and postoperative.
2. management of chronic pain (WHO guidelines).
3. choice of drugs:
   a. non steroidal anti-inflammatory agents.
   b. opiate agonists.
4. use of adjuvants in pain control.
5. routes of administration and administration techniques, oral, topical patches, IM, IV, continuous infusion, patient controlled analgesia, ambulatory pump administration.
6. conversion of pain medication from IV to oral route of administration.
7. identification and management of overdoses:
   a. use of naloxone.
   b. use of flumazenil.
8. implications of hepatic impairment, renal impairment, or GI compromise on the choice of analgesic agent.

F. **Anesthetic Agents** - the fellow should have a general understanding of:

1. Inhalant agents- including metabolism, effects of renal and hepatic impairments, toxicities and cardiovascular effects of:
   a. IV agents- including metabolism, effects of renal and hepatic impairments, toxicities and cardiovascular effects.
   b. Support of the patient in the postoperative (post-anesthesia) period.
   c. Agents used for regional, topical, and local analgesia as well as the toxicities, metabolism, effects of renal and hepatic impairment, hypersensitivities,
cardiovascular, and neurologic effects.

G. **Anticoagulants** - The fellow should know:
   1. mechanism of action of the various anticoagulants
      including:
      a. heparin.
      b. low molecular weight heparin.
      c. warfarin.
   2. indications for and use of the anticoagulants (including general dosing parameters):
      a. for treatment of coagulopathies (DVT, PE).
      b. for prophylaxis.
      c. as minidose with central lines.
   3. management of therapy and complications of anticoagulant therapy.

H. **Cardiovascular Drugs** - The fellow should know the indications for and use of:
   1. cardiotonic drugs in the management of cardiac decompensation.
   2. antiarrhythmic agents for control of treatment related arrhythmias.
   3. diuretics for management of cardiac decompensation, for fluid mobilization and for hypertension.
   4. vasoactive drugs in the management of septic shock and for hypertension.
   5. calcium channel blocking agents and renin-angiotensin-aldosterone system inhibitors use in cardiovascular disorders.
   6. use of the antilipemic agents.

I. **Miscellaneous** - The fellow should have a general knowledge of indications and uses of:
   1. histamine (H₂) receptor antagonists:
      a. prophylactic and therapeutic use for GI indications.
b. use as a premedication for chemotherapy.
c. indication for route of administration (IV vs. po).

2. antidepressants
   a. indications for use in the oncology population.
   b. choice of agents, dose, course of therapy.
   c. use in control of painful neuralgias.

3. anticonvulsants
   a. indications for use in oncology population.
   b. choice of agents and therapeutic monitoring.
   c. use as an adjuvant in neuropathic pain (gabapentin).

4. insulin and oral hypoglycemics
   a. types of insulin and indications for their use:
      (1) IV vs. SQ vs. intranasal use,
      (2) short acting or long acting insulins, and
      (3) prandial dosing or basal insulins.
   b. use of insulin infusion in the ICU.
   c. oral hypoglycemics:
      (1) choice of agents and combinations, and
      (2) goals of therapy.

5. anti-emetics
   a. choice of agents and indications.
   b. route of administration, duration of action and duration of treatment.
      (1) prophylaxis of chemotherapy induced nausea/vomiting,
      (2) treatment of chemotherapy induced nausea/vomiting, and
      (3) treatment of disease related nausea/vomiting.

6. steroids
   a. for treatment of hypersensitivity reactions.
   b. for prophylaxis of hypersensitivity reactions.
   c. for antiemetic use.
7. hormones  
   a. use of estrogens, anti-estrogens in the gynecologic oncology population.

8. agents for osteoporosis  
   a. prevention: calcium and Vitamin D.  
   b. treatment: bone resorption inhibitors.  
      (1) choice of agents, and  
      (2) indications for therapy in the gynecologic population.

9. drugs that modify gastrointestinal function  
   a. choice and use of antidiarrhea agents.  
   b. choice of agents and indications for use of cathartics and laxatives.  
   c. choice of agents, dosing and interactions of antacids.
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X.

RADIATION THERAPY
X. RADIATION THERAPY

Terminal Objectives:

The fellow should be familiar with the principles and practices of radiation therapy. This knowledge should be of sufficient depth so that active participation with the Radiation Oncologist in treatment planning can be undertaken (both brachytherapy and external beam therapy).

The fellow should be able to manage radiation-induced complications.

Enabling Objectives:

A. Basic parameters of radiotherapy- The fellow should understand:
   1. the interaction of photon radiation and matter (i.e., Compton effect, pair production and photoelectric effect).
   2. general tissue radiosensitivity/radio-resistance, and normal tissue dose tolerances.
   3. the time-dose-fractionation relationships.
   4. volume-dose relationships.
   5. external beam therapy principles and equipment.
   6. brachytherapy principles and equipment, including the use of:
      a. intracavitary applications.
      b. interstitial applications.
      c. intraperitoneal sources.
      d. low dose rate (LDR) vs. high dose rate (HDR) techniques and their radiobiological differences.
      e. radioisotopes-half lives of commonly used isotopes,
radiation type emitted energies, as well as their specific uses.

7. particle beam therapy-electrons, neutrons, and protons.
8. radiation treatment planning concepts, including:
   a. simulation.
   b. basic dosimetry considerations.
   c. computer based treatment planning.
   d. imagefusion of data from CT, MRI, and PET.
   e. definition of tumor and normal tissue volumes, 3-
      dimensional imaging, including delineation of gross
      target volume (GTV), clinical target volume (CTV),
      and planning target volume (PTV).
   f. 3-dimensional dose distribution, including conformal
      3-D radiotherapy and intensity modulated rational
      therapy (IMRT).
   g. the integration and impact of concurrent
      chemotherapy with radiotherapy.
   h. the integration of external beam radiation and
      brachytherapy.
   i. dose volume histograms of tumor and normal tissues
      and how these are evaluated.

B. Radiobiology-The fellow should understand:
1. the mechanisms of radiation damage, both direct and
   indirect.
2. cell survival curves and the concept of sublethal injury.
3. the relative biologic effectiveness (RBE) and linear
   energy transfer (LET) of different types of radiation.
4. the modification of cellular radiosensitivity produced by:
   a. molecular oxygen (oxygen enhancement ratio).
   b. alterations in cell cycle phase.
   c. radiation sensitizers.
5. recovery and repair of tissue following radiation.
6. protection from radiation effect.
7. relative radiosensitivity among different organ systems (normal tissue tolerance).

C. **Radiation measurement and dosimetry** - The fellow should understand the concept and use of:
   1. source to skin distance (SSD).
   2. source axis distance (SAD).
   3. backscatter, absorption, attenuation.
   4. isodose curves calculated for:
      a. teletherapy equipment (orthovoltage and high energy).
      b. intracavitary applicators.
      c. interstitial applicators.
   5. central axis depth dose curve.
   6. the term penumbra.
   7. beam modifiers—cerrobend blocking, multileaf collimator wedges.
   8. points “A”, “B” and milligram hours in brachytherapy dosimetry.

D. **Complications (acute and delayed)** - The fellow should be able to recognize and treat complications involving the:
   1. G.I. tract.
   2. urinary tract.
   3. sexual dysfunction.
   4. skin.
   5. bone.
   6. bone marrow.
   7. kidneys.
   8. liver.
   9. central nervous system.
   10. radiation necrosis.
   11. radiation carcinogenesis.
12. the impact of organ functional subunits or partial organ tolerances.
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XI.

ORGAN-SPECIFIC DISEASES AND THERAPEUTIC OPTIONS
XI. ORGAN-SPECIFIC DISEASES AND THERAPEUTIC OPTIONS

Terminal Objectives:

The fellow should have sufficient knowledge of general medical and gynecologic oncology principles to permit adequate pre-treatment evaluation and management of the oncology patient and to allow appropriate selection of consultants when indicated.

Enabling Objectives:

The fellow should be able to discuss the available methods of evaluation and management of malignant diseases in all groups of patients. Some examples of the types of problems with which the fellow should be familiar are listed below.

A. Preoperative Evaluation- The fellow should know the indications for and interpret correctly:
   1. renal function tests.
   2. coagulation profile.
   3. pulmonary function tests.
   4. liver tests.
   5. cardiac function tests.

B. Preoperative Preparation- The fellow should be able to:
   1. prepare the bowel adequately.
   2. determine the position of ostomy sites.
   3. correct fluid, electrolyte and nutritional deficiencies.
   4. order pulmonary preparation when indicated.
   5. inform and counsel the patient and family.
   6. order and choose appropriate antibiotics and anticoagulants when indicated.
C. **Choice of Treatment** - The fellow should be able to discuss the available methods of evaluation and management of malignant disease in all groups of patients. Some examples of the types of problems with which the fellow should be familiar are listed below.

1. **Cervix** - The fellow should be able to discuss available methods of evaluation and management of:
   a. cervical intraepithelial neoplasia.
   b. HPV infection when subtyping is positive for types 16, 18, and others associated with squamous cell carcinoma.
   c. stage IA cervical carcinoma when a biopsy shows:
      (1) a 0.5 mm depth of invasion,
      (2) 2.5 mm depth of invasion and capillary-like space involvement with nests of tumor cells, or
      (3) 4.5 mm depth of invasion.
   d. stage IB cervical carcinoma, all cell types.
   e. stage IB cervical carcinoma when:
      (1) a lymphadenectomy shows positive nodes in each obturator fossa.
      (2) positive para-aortic nodes are found at the time of exploration for radical hysterectomy, and when:
         (a) the same patient has a positive scalene node.
      (4) the tumor measures 6 cm. in diameter.
   f. stage II, III, IV cervical carcinoma.
   g. recurrent carcinoma of the cervix following standard pelvic radiation therapy.
   h. recurrent squamous cell carcinoma in the vagina following radical hysterectomy and node dissection.
   i. recurrent squamous cell carcinoma of the cervix
involving the pelvic side wall.

2. **Vulva**-The fellow should be able to discuss available methods of evaluation and management of:
   a. vulvar intraepithelial neoplasia.
   b. early invasive squamous cell carcinoma.
   c. invasive squamous cell carcinoma.
   d. malignant melanoma.
   e. invasive carcinoma of the Bartholin gland.
   f. basal cell carcinoma.
   g. sarcomas.
   h. Paget disease.

3. **Corpus**-The fellow should be able to discuss available methods of evaluation and management of:
   a. patients with hereditary syndromes associated with endometrial cancer.
   b. endometrial cancer of each stage and grade and other risk factors including nodal status, myometrial penetration, histologic subtypes, and peritoneal cytology.
   c. recurrent endometrial carcinoma in the pelvis and at extrapelvic sites.
   d. endometrial stromal sarcoma.
   e. malignant mixed müllerian tumors.
   f. leiomyosarcoma.

4. **Ovary**-The fellow should be able to discuss available methods of evaluation and management of:
   a. hereditary ovarian cancer syndromes.
   b. appropriate surgical staging and management of a Stage IA epithelial carcinoma of:
      (1) low malignant potential,
      (2) grade 1, and 2, and
      (3) grade 3.
c. stage IC and II A, B and C epithelial carcinoma.
d. stage III epithelial carcinoma with
   (1) one metastatic focus on the omentum,
   (2) residual disease involving the spleen and right diaphragm,
   (3) large bilateral pleural effusions,
   (4) a 3 cm residual in the base of the small-bowel mesentery,
   (5) complete clinical remission after adjuvant chemotherapy, and
   (6) a lesion of low malignant potential with miliary lesions throughout the peritoneal cavity.
e. recurrent epithelial carcinoma with obstruction of the sigmoid colon by tumor.
f. recurrent epithelial carcinoma with multiple sites of small bowel obstruction.
g. germ cell tumors of all cell types and grades, including:
   (1) stage IA,
   (2) stage II,
   (3) stage III, and
   (4) recurrent disease.
h. pseudomyxoma peritonei.

5. Fallopian Tube-The fellow should be able to discuss available methods of evaluation and management of:
a. Stage 1 adenocarcinoma completely excised.
b. adenocarcinoma with bulk residual pelvic tumor.

6. Vagina-The fellow should be able to discuss available methods of evaluation and management of:
a. all histologic types of vaginal cancer involving the:
   (1) upper third of vagina,
   (2) middle third of vagina, or
(3) lower third of vagina.

b. sarcomas.

7. **Gestational Trophoblastic Neoplasia** - The fellow should be able to discuss available methods of evaluation and management of:
   a. hydatidiform mole associated with a (an)
      (1) elevated hCG titer at 2 weeks post evacuation,
      or
      (2) persistent hCG titer at 10 weeks post evacuation.
   b. gestational trophoblastic neoplasia (GTN) with pulmonary metastases.
   c. GTN with brain or liver metastases.

8. **Breast** - The fellow should have knowledge of breast diseases and should be able to advise patients regarding:
   a. the frequency of breast carcinoma.
   b. high-risk sub-populations.
   c. benign breast lesions which predispose to subsequent breast carcinoma.
   d. mammography and breast self exam in screening and diagnosis.
   e. the significance of estrogen and progesterone receptors in breast carcinoma.
   f. staging of breast cancer.
   g. the indications for lumpectomy, modified radical mastectomy, sentinel node biopsy, and axillary node dissection in the treatment of breast carcinoma.
   h. the role of radiotherapy and chemotherapy in primary treatment.
   i. breast reconstructive techniques.
   j. the role of tamoxifen and aromatase inhibitor
therapy.

k. appropriate follow up.
l. the pros and cons of hormone replacement therapy for breast cancer survivors.

9. **Cancers in Pregnancy** - The fellow should be able to discuss the methods of evaluation and management of disease according to:
a. disease site.
b. gestational age.

10. **Metastatic Cancers to Pelvic Reproductive Organs** - The fellow should be able to discuss available methods of evaluation and management of metastatic disease from:
a. the breast.
b. the gastrointestinal tract.
c. the hematologic system.
d. cutaneous melanoma.

11. **Hormonal Replacement Therapy (HRT)** - The fellow should be able to discuss potential risks and benefits of HRT in patients treated for invasive carcinoma arising in the:
a. cervix.
b. corpus.
c. ovary.
d. breast.
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XII.

SURGICAL PROCEDURES
XII. SURGICAL PROCEDURES

Terminal Objectives:

The fellow should have sufficient training and experience that a variety of therapeutic and diagnostic procedures may be independently and competently performed by the completion of the fellowship.

Enabling Objectives:

A. **Surgical Anatomy**-The fellow should have adequate knowledge of the:
   1. blood supply and collateral circulation of all organs in the abdomen, pelvis, groin, and breast.
   2. lymphatics of all organs in the abdomen, pelvis, groin, and breast and the left supraclavicular area.
   3. avascular spaces in the pelvis.
   4. neuroanatomy of the pelvis.

B. **Preoperative Preparation**-The fellow should be able to:
   1. prepare the bowel adequately prior to surgery.
   2. determine the position of ostomy sites.
   3. correct fluid, electrolyte and nutritional deficiencies.
   4. order pulmonary preparation when indicated.
   5. inform and counsel the patient and family properly.
   6. order and choose appropriate antibiotics and anticoagulation when indicated.
   7. recognize the need for subacute bacterial endocarditis prophylaxis.
   8. counsel regarding DVT prophylaxis.
   9. counsel regarding appropriate use of beta-blockers for cardiovascular prophylaxis.
C. **Primary Therapy**- The fellow should be able to perform:

1. hysterectomies that are:
   a. vaginal.
   b. abdominal.
   c. radical.
   d. laparoscopic-assisted.
2. salpingo-oophorectomies.
3. radical adnexal cytoreductions.
4. lymphadenectomies of the:
   a. inguinal.
   b. femoral.
   c. pelvic.
   d. para-aortic areas.
5. vaginectomies that are:
   a. simple.
   b. radical.
6. vulvectomy that are:
   a. skinning.
   b. simple.
   c. partial.
   d. radical.
7. pelvic exenterations that are:
   a. anterior.
   b. posterior.
   c. total.
8. omentectomies.
9. insertions of intracavity radiation application.
10. laser therapy.
11. laparoscopic surgical approaches where applicable, including: hysterectomies, salpingo-oophorectomies, lymphadenectomies, staging procedures.

D. **Gastrointestinal, Upper Abdominal**- The fellow should be
able to perform:
1. placements of feeding jejunostomy/gastrostomy.
2. resections and re-anastomoses of small bowel.
3. bypass procedures of small bowel.
4. mucous fistula formations of small bowel.
5. ileostomies.
6. repair of fistulas.
7. resection and reanastomoses of large bowel (including low anterior resection and reanastomosis).
8. bypass procedures of large bowel.
9. mucous fistula formations of large bowel.
10. colostomies.
11. splenectomies.
12. liver biopsies.

E. Urinary Tract-The fellow should be able to perform the following site-specific procedures on:
1. the bladder including:
   a. partial cystectomies.
   b. total cystectomies.
   c. repairs of vesicovaginal fistulas with:
      (1) primary closures, or
      (2) secondary closures using interposition of autologous tissue(s), such as omentum and bulbocavernosus muscle.
   d. cystotomies.
2. the ureter, including:
   a. ureteroneocystostomies with and without:
      (1) bladder flaps, or
      (2) psoas fixations.
   b. end-to-end ureteral re-anastomoses.
   c. transuretero-ureterostomies.
   d. small-bowel interpositions.
e. cutaneous ureterostomies.

f. repairs of intraoperative injuries to the ureters.

3. conduits developed:
   a. from ileum.
   b. from colon.
   c. to be continent.

F. Incision and Drainage of Abdominal or Perineal Abscesses-The fellow should be able to handle these problems medically and surgically.

G. Reconstruction-The fellow should be surgically able to:
   1. develop a neovagina from:
      a. split thickness skin grafts.
      b. pedicle grafts.
      c. myocutaneous grafts.
   2. develop a new pelvic floor from:
      a. omental pedicle grafts.
      b. transposition of muscle grafts.

H. Evaluation Procedures-The fellow should be able to perform:
   1. cystoscopies.
   2. laparoscopies.
   3. colposcopies and loop excisions.
   4. sigmoidoscopies.
   5. breast mass:
      a. fine-needle aspirations.
      b. needle biopsies.

I. Management of Operative and Postoperative Complications-The fellow should be able to recognize and manage:
   1. transfusion reactions.
   2. coagulopathies.
   3. cardiac arrest.
4. injuries to bladder, ureters, vessels and bowels.
5. transection of the obturator nerve.
6. acute intraoperative bleeding.

J. **Management of postoperative complications** - The fellow should be able to recognize and manage postoperative:
1. atelectasis.
2. bleeding.
3. pulmonary embolization.
4. vesicovaginal fistulas.
5. ureterovaginal fistulas.
6. rectovaginal fistulas.
7. ileovaginal fistulas.
8. renal failure.
10. myocardial infarction.
11. cardiac arrhythmia.
12. hypertensive crisis.
13. fever.
14. respiratory insufficiency including ARDS following surgery.
15. wound problems, including infection, dehiscence, and evisceration.
16. septic pelvic thrombophlebitis.
17. bowel obstruction.
18. mental status changes.
19. jaundice.
20. metabolic abnormalities, including hypercalcemia, hyponatremia, hypomagnesemia.
21. sepsis, including septic shock.
22. short bowel syndromes.
23. hernias, including ventral, perineal, and peristomal types.
24. acute pain.
25. chronic pain.
XIII.

MISCELLANEOUS
XIII. MISCELLANEOUS

Terminal Objectives:

The fellow should have knowledge and skill in areas relating to the care of gynecologic oncology patients.

Enabling Objectives:

A. The fellow should be able to:
   1. place temporary or permanent central venous access lines.
   2. perform orotracheal intubations.
B. The fellow should understand the principles of:
   1. medicolegal issues.
   2. informed consent.
   3. clinical trials.
   4. quality assurance.
   5. institutional review board approval processes.
C. The fellow should understand the principles of:
   1. medical ethics including the proper professional conduct concerning the rights and duties of the physician, patients, and fellow practitioners, as well as the physician’s actions in the care of patients and in the relations with their families.
   2. advanced directives.
   3. palliative care (at home and in the hospital), including
      a. medical options (management of pain and intestinal obstructions).
      b. surgical options (management of pain and intestinal obstructions).
      c. radiotherapeutic options (management of nerve and...
bone pain and prevention of fractures).
4. hospice care.
5. death and dying (counseling for the dying patient and for family members).